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| 09/878,189 | 06/12/2001 | Guoyi Fu | EMI-21 | 1958 |

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EXAMINER

VARGOT, MATHIEU D

ART UNIT

PAPER NUMBER

1732

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/878,189

Applicant(s)

Fu et al.

Examiner

M. VAR60T

Group Art Unit

1732

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-20 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-20 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
 - ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

Art Unit: 1732

1. Claims 13-15 and 18-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 13-15, the units should be --mm--, not “nm” as set forth. Also, the circa (squiggle) signs before the numbers should be replaced with language --around-- or --about-- for clarity.

Also, claims 18-20 recite that the particles are “deposited in a layer thickness...” and for clarity, it is suggested that consistent terminology be used--ie, claim 1 recites “adding a suspension...”.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 and 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gaskin et al (col. 4, lines 65-71; col. 5, lines 6-35) in view of either of Nolte or Bagg et al.

Gaskin et al discloses the basic claimed process for making opal-like sphere-based crystals lacking essentially the aspect of placing a suspension of monospheres on a flat moving filtration membrane and moving the monospheres over a vacuum filtration zone to pack them. However, each of Nolte and Bagg et al teach a flat bed moving filtration membrane wherein particulate matter in a suspension or solution is aligned and layered, with the removal of the liquid through the vacuum. It is submitted that such a filtration process is fairly well known in the art and that

Art Unit: 1732

one of ordinary skill in this art would have been expected to know of same and employ it in lieu of the centrifuging taught in Gaskin et al in that the vacuum filtration is gentler and facilitates forming uniform layers. See Nolte, column 1, lines 28-30. Gaskin et al teaches the bonding of the monospheres using a chemical agent or heating--see the above-noted passages. The exact concentration of the monospheres in the suspension, thickness of the deposited layer and the exact vacuum pulled constitute result effective variables which would have been readily determined through routine experimentation dependent on the exact opal-like effect desired. The particles of Gaskin et al are disclosed as 150-450 millimicrons (see claim 1 therein), which would fall within the range set forth in instant claims 16 and 17.

3. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaskin et al (col. 4, lines 65-71; col. 5, lines 6-35) in view of either of Nolte or Bagg et al and further in view of Zakhidov et al (col. 9, lines 12-24; col. 7, lines 14-30).

Gaskin et al, Nolte and Bagg et al disclose the basic claimed process as set forth in paragraph 2, supra, the combination essentially lacking a disclosure of using polymeric monospheres and removing the monospheres as set forth in instant claim 7 to form an inverse opal-like structure. Zakhidov et al discloses both of these aspects, the former at column 9, lines 12-24 and the latter at column 7, lines 14-30. It would have been obvious to one of ordinary skill in the art at the time of invention to have modified the process of Gaskin et al as taught by Zakhidov et al dependent on the exact opal-like design desired.

Art Unit: 1732

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Vargot whose telephone number is 703 308-2621.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0661.

M. Vargot

September 7, 2003

M. Vargot
MATHIEU D. VARGOT
PRIMARY EXAMINER
GROUP 1300

9/7/03